

We claim:

1. A device for coupling vessels comprising:
 - a main trunk;
 - first and second stent-anchors associated with said main trunk;
 - a graft extension extending from said main trunk;
 - a bypass vessel;
 - an internal anchor and an external anchor; said internal anchor and said external anchor cooperating to seal said graft extension and said bypass vessel.
2. The device of claim 1 wherein said bypass vessel comprises an artificial graft or a donor vessel.
3. The device of claim 2 wherein said bypass vessel extends over said graft extension and wherein said internal anchor is disposed in said graft extension in an area at least partially overlapped by said bypass vessel.
4. The device of claim 3, wherein said external anchor is integral with said bypass vessel in an area which at least partially overlaps said bypass vessel.
5. The device of claim 2 wherein said graft extension extends over said bypass vessel and wherein said internal anchor is disposed in said bypass vessel in an area at least partially overlapped by said graft extension.
6. The device of claim 5 wherein said external anchor is integral with said graft extension in an area which at least partially overlaps said bypass vessel.

7. The device of claim 1 wherein said first and second stent-anchors are disposed in an interior area of said main trunk on opposite ends of said graft extension.
8. The device of claim 7 wherein said first and second stent-anchors exude an outward force to seal said main trunk in a main vessel.
9. The device of claim 8 wherein said first and/or second stent-anchors comprise a plastically deformable material.
10. A device for coupling vessels comprising:
a main vessel having an end;
a bypass vessel having an end;
a coupling graft disposed within said main vessel end and said bypass vessel end;
a main vessel internal stent-anchor configured to seal said main vessel with said coupling graft;
a bypass vessel internal stent-anchor configured to seal said bypass vessel with said coupling graft; whereby said main vessel and said bypass vessel are held in fluid communication via said coupling graft.
11. The device of claim 10, wherein said bypass vessel comprises a bypass graft or a donor vessel.
12. The device of claim 11, further comprising an external anchor for sealing said main vessel end and said bypass vessel end around said coupling graft.

13. The device of claim 12 wherein said main vessel internal stent-anchor and said bypass vessel internal stent-anchor exude an outward force to seal said coupling graft to said vessels.

14. The device of claim 13 wherein said stent-anchors comprise a plastically deformable material.

15. The device of claim 14 wherein said stent-anchors are ratchetable to increase a diameter of said stent-anchors.

16. The device of claim 15 wherein said stent-anchors are ratchetable by balloon expansion.

17. A method of performing end-to-side anastamosis comprising the steps of:

inserting a graft coupling device having a main trunk and a graft extension in a main vessel having an incision such that said graft extension protrudes from said extension;

sealing said main trunk to said main vessel with anchors;

placing a bypass graft over a portion of said graft extension; and

sealing said bypass graft and said graft extension with cooperating interior and exterior anchors.

18. A method of performing end-to-side anastamosis comprising the steps of:

delivering a first guide wire to a junction site in a main vessel;

puncturing said main vessel at said junction site;

delivering a graft coupling device having a main trunk and a graft extension having an external anchor to said junction site via said first guide wire;

positioning a second guide wire to exit said graft extension of said graft coupling device at said puncture site;

sealing said main trunk to said main vessel with interior anchors disposed on opposite ends of said puncture site;

advancing a balloon along said second guide wire to a location corresponding to said external anchor;

balloon expanding said external anchor to a diameter sufficient for accepting a bypass graft;

navigating a bypass graft to said junction site and into said graft extension;

advancing an internal anchor along said second guide wire; and

deploying said internal anchor, thereby sealing said extension graft and said bypass graft.

19. A method of performing end-to-end anastomosis comprising the steps of:

positioning a first vessel end and a second vessel end over a coupling graft; and

expanding an anchor in each of said ends for sealing said vessels with said coupling graft.